

Remarks

Claims 1-26 are pending in the application, and each was rejected. By this paper, claims 1, 11 and 17 are amended, and new claim 27 is added. Based on the following, consideration of the amended claims, and reconsideration of the remaining claims, are requested.

Claim Rejections—35 U.S.C. § 102

The Examiner rejected claims 1-26 under 35 U.S.C. § 102(b) as being anticipated by European Patent Application Publication No. EP0556942 for which the Examiner provided a number of English language abstracts (the '942 reference). By this paper, each of the independent claims, claims 1, 11 and 17 are amended to more particularly point out and distinctly claim the subject matter of the invention. For example, each of these independent claims recites an electric machine that is "operatively connected to the engine and capable of producing torque and controlling a speed of the engine...." Claim 1 recites a method that includes the step of "commanding the electric machine to control the engine speed based at least in part on [a] desired engine output...." Similarly, claim 11 recites a method that includes the step of "commanding the electric machine to control the speed of the engine based at least in part on the desired [engine] speed...." Finally, claim 17 recites a vehicle that includes at least one controller configured to "command the electric machine to control the engine speed based at least in part on the desired engine output...." The '942 reference does not expressly or inherently describe the elements recited in independent claims 1, 11 or 17.

The '942 reference describes a hybrid vehicle drive unit that includes an electronic control (6) and an accelerator pedal (7) that are used to regulate engine power output, by adjusting the fuel supplied to the engine. In addition, the '942 reference describes a generator (2) that is connected to a crankshaft of the engine (1). The '942 reference does not describe using the generator (2) to control the speed of the engine (1), as specifically recited in each of the three independent claims of the present application. Moreover, claim 1 recites

the step of "determining an output error of the engine based at least in part on the command to the electric machine...." Similarly, claim 11 recites the step of "determining a torque for the engine based at least in part on the command to the electric machine...." Claim 17 recites that the controller is configured to "determine an output error of the engine based at least in part on the command to the electric machine...." In each of these three claims, the previous step of commanding the electric machine to control the engine speed is used, at least in part, to determine an output error for the engine, or in the case of claim 11, a torque for the engine.

The '942 reference does not expressly describe the step of determining an output error, or determining a torque, for the engine based at least in part on a command to the electric machine. Moreover, because the '942 reference does not expressly or inherently describe the step of commanding the electric machine to control the engine speed, it cannot inherently describe the step of using such a command to determine an output error or a torque for the engine. Therefore, each of independent claims 1, 11 and 17 contains elements which are neither expressly nor inherently described in the '942 reference, and therefore, none of these claims is anticipated by that reference.

The Examiner rejected claims 1-26 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2006/0102393 (the '393 application). The Examiner refers to paragraphs 0014-0018 in support of the 102(e) rejections. These paragraphs discuss a determination of the electrical power loads of a vehicle, and converting these loads to a desired or set point torque for the vehicle engine. As stated in paragraph 0012, the electric power output of the electric machine that is required to meet the power demands of the vehicle electrical system "is taken as the basis for ascertaining [the] desired or set point torque of the internal combustion engine." This is not the same as commanding the electric machine to control the engine speed based at least in part on some desired engine output, as specifically recited in claims 1, 11 and 17 of the present application. In fact, the '393 application cannot be said to inherently describe such use of an electric machine, since it explicitly states that the idle-speed control has advantages because it controls "the internal combustion engine in open or closed loop as a function of the requirements of the vehicle

electrical system, *without consideration of the speed control,*" (emphasis added). Thus, the '393 application neither expressly nor inherently describes all of the elements of claims 1, 11 or 17, and therefore, does not anticipate any of these claims.

The Examiner rejected claims 1-26 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,823,840 (the '840 patent). The '840 patent describes a control system and method for a hybrid electric vehicle that is specifically configured to control the manifold absolute pressure in the vehicle engine—see, e.g., column 3, lines 18-20. In order to maintain the manifold absolute pressure within an acceptable range, the control system is applied to reduce variation in the load placed on the engine. The system and method described in the '840 patent uses a "motor/generator to load-level the torque supplied from the internal combustion engine and to maintain the manifold absolute pressure of the internal combustion engine within an acceptable range." (Col. 3, ll. 38-44.) This is not the same as commanding the electric machine to control the engine speed as specifically recited in claims 1, 11 and 17 of the present application.

In addition, as with the references above, since there is not an express or inherent description of this type of command to the electric machine, such a command cannot be used to determine an output error, or an output torque, of the engine, as is also recited in the claims of the present application. Rather, the '840 patent describes the control of a motor/generator to "supplement[] the ICE torque in such a way that the ICE operates in an ideal, low emission MAP range." (Col. 6, ll. 42-44.) The method and system described in the '840 patent are not used to control an electric machine to control engine speed, as specifically recited in the independent claims of the present application. To the extent that the use of the motor/generator to load-level the engine as described in the '840 patent results in some speed change in the engine, this is not the same as specifically commanding the electric machine to control the engine speed. Moreover, even if, for the sake of analysis, the load-leveling function is considered to be a speed control, the '840 patent does not expressly or inherently describe the use of the electric machine command to determine an output error, or

a torque, for the engine. Yet these elements are expressly recited in claims 1, 11 and 17 of the present application.

The present application recites a vehicle and method that provides advantages over prior art vehicles and methods in that an electric machine is used to control engine speed, and the commands provided to the electric machine to implement this control are then used to determine an output error, or a torque, for the engine, without relying on additional sensors to provide the engine information. This is cost effective and efficient and is not taught by any of the references cited by the Examiner.

Amended claims 1, 11 and 17 are the base claims for the remaining dependent claims, including new claim 27. Each of these dependent claims contains all of the limitations of its respective base claim, as well as additional limitations which further distinguish it from the cited references. Therefore, Applicants submit that claims 1-27 are not anticipated by any of the references cited by the Examiner, and accordingly, request allowance of each of the pending claims.

Respectfully submitted,

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Date: October 18, 2006

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